



## **ELVES light intensity studies at the Pierre Auger Observatory**

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The Pierre Auger Observatory, located in Malargüe (Argentina), is the largest facility (3000 km<sup>2</sup>) for the study of Ultra High Energy Cosmic Rays ( $E > 10^{18}$  eV). The four sites of the Fluorescence Detector (FD) are continuously observing the night sky with moon fraction below 50% (13% duty cycle) with 100 ns time resolution and a space resolution below one degree. The fluorescence light ( $\lambda = 300$  nm to 420 nm) produced by shower in the atmosphere is proportional to the energy of the primary cosmic ray. The atmospheric optical properties are continuously monitored by the Observatory with a set of dedicated instruments (lidars, cloud cameras, weather stations). The energy of each cosmic ray can therefore be measured with a systematic energy resolution about 14%. After the serendipitous discovery of an ELVES candidate event in 2005, a special trigger has been implemented to detect these phenomena with high efficiency, fully operational since March 2013. Since January 2014 the ELVES candidates are read out with a modified DAQ scheme, to observe the light emission from above the vertical of the causative lightning. This paper will report about the analysis of the correlation between light emission and lightning intensity as recorded by lightning detection networks, on data taken in the last three years of operation.